



controversial topics in surgery

Stapled transanal resection of the rectum (STARR) for the obstructed defaecation syndrome

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Obstructive defaecation is a surprisingly common symptom particularly amongst females. These patients can often be difficult to assess as they may well have a mixed pattern of symptoms and some may have co-existing faecal incontinence.

Obstructive defaecation has been treated for many years by behavioural modification, and biofeedback with mixed success. Because of anatomical defects demonstrated on investigation, particularly defaecating proctography, surgeons have for many years tried to develop surgical procedures to correct these abnormalities and improve symptoms. However, as the paper by Bhardwaj and Phillips point out, many of the abnormal anatomical features seen on defaecating proctogram are found in normal asymptomatic individuals. Previous surgical attempts at correction of these defects have singularly proved unsuccessful. Until the recent advent of the STARR procedure, surgeons were faced with few options for surgical treatment of what can be extremely troublesome symptoms. The STARR procedure was evolved from stapled anopexy and attempts to correct some of these anatomical defects; in particular distal intrarectal intussusception and a rectocele. STARR was introduced into the UK in a graduated fashion with surgeons being

specifically trained in centres set up to evaluate the data. A national audit was set up by David Jayne in Leeds. Data on the continent and UK appear to show that STARR is a safe procedure with a few complications if performed by appropriately trained surgeons. Many series show a significant advantage in improvement of symptoms. However, the long-term data from the UK experience is not yet available. More recent innovations such as TRANSTARR for larger internal prolapses and laparoscopic ventral rectopexy do show promise as alternative treatment for some patients. These papers provide a view as to where STARR sits at the moment. The key to any surgical procedure, however, is careful patient selection. Appropriately selected patients with obstructive defaecation syndrome and, in particular, distal intrarectal intussusception are likely to benefit from a STARR procedure. We await data from the national audit and longer term outcome studies.

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STARR: the case for

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Patient's who may be considered for a stapled transanal resection of the rectum (STARR) are those who suffer from the obstructed defaecation syndrome. This syndrome is characterised by straining at stool on more than 25% of occasions, the need to self-digitate, a sense of incomplete evacuation, laxative abuse or the use of enemas to achieve bowel evacuation more than once per week. Physical examination may reveal a rectocele and an occult rectal intussusception. Assessment of these patients prior to consideration of a STARR procedure is best done in conjunction with a

gynaecologist and radiologist who have a special interest in pelvic floor disorders.

Patients being considered for a STARR should be investigated to rule out a proximal cancer, slow transit constipation, irritable bowel syndrome or anismus. Those whose investigations confirm obstructed defaecation syndrome should initially be treated by dietary modification and pelvic floor retraining.¹ The STARR procedure may be considered in patients for whom such conservative treatments have failed.

Alternative surgical therapies to STARR have primarily consisted of rectocele repair. Conventional rectocele repair may be undertaken by posterior vaginal repair, transanal repair or by laparoscopy. These procedures will not treat any associated occult rectal intussusception. Patients with constipation are least likely to have a satisfactory outcome after rectocele repair. The presence of a co-existing enterocele detected clinically or observed at proctography would be a relative contra-indication to the STARR procedure and should be treated by laparoscopic ventral rectopexy or transvaginal enterocele and posterior repair.

The STARR procedure is based on the stapled haemorrhoidectomy technique. Two PPH 01 (Johnson & Johnson; Edinburgh, UK) circular staplers are used sequentially to perform an anterior and posterior full-thickness rectal wall resection ultimately producing a circumferential transanal resection of the rectum.² This, in effect, eliminates the structural abnormalities associated with obstructed defaecation syndrome (rectocele, intussusception and mucosal prolapse).

Outcomes

The first peer-reviewed publication on outcomes after STARR was in 2004.^{2,5} Outcomes after STARR in 90 patients were reported to be excellent in 48 patients, good in 35, fairly good in five and poor in four after 1-year follow-up.² STARR was compared in a randomised trial with perineal levatorplasty for the surgical treatment of obstructed defaecation syndrome which found that outcomes were comparable although STARR was associated with less postoperative pain, absence of postoperative dyspareunia, reduced rectal sensitivity threshold volume, and absence of residual rectocele at defaecography.⁵

A collaboration between seven colorectal units in Italy subsequently found that 55 (65%) of 85 consecutive patients who underwent a STARR procedure reported subjective improvement of their symptoms after a median follow-up of 17 months.⁴ Of patients with three or more symptoms of obstructed defaecation syndrome pre-operatively, 58% reported subjective symptom improvement postoperatively ($P < 0.01$). Univariate analysis of pre-operative symptoms found that patients who self-digitate ($P < 0.01$), have co-existing anismus ($P < 0.05$), enterocele ($P < 0.05$), a larger sized rectocele ($P < 0.05$), lower bowel frequency ($P < 0.05$) and a sense of incomplete evacuation ($P < 0.05$) had the poorest outcomes.

Anal incontinence was present pre-operatively in 15 patients (17%). Incontinence resolved postoperatively in eight of 15 patients, was unchanged in four patients and worsened in three patients. New onset incontinence additionally developed in five patients (6%).

Postoperative bleeding was the most common complication affecting 10 patients (12%). Other postoperative symptoms noted were urgency in nine patients (11%), tenesmus affected

five patients (6%), perineal pain was reported by nine patients (11%) and dyspareunia in one patient (1%). Recurrent rectocele was found after surgery in 25 patients (29%) and residual intussusception in 24 patients (28%). Sixteen of these patients required re-operation, nine for recurrent disease.

The study concluded that STARR achieved acceptable results but at the cost of a high re-operation rate. It was also concluded that the operation should only be performed by colorectal surgeons in selected patients.

In the UK, the number of surgeons allowed to perform a STARR procedure has been limited. Individuals considered to be proficient at stapled anorectal STARR by observing six patients undergoing the procedure. There then follows a period of mentorship until the surgeon is considered proficient. Short-term outcomes after surgery have been satisfactory for the majority of patients treated.⁵

Outcomes 12 months after STARR have recently been reported by the European STARR registry.⁶ The authors report significant resolution of symptoms and improvement in quality of life in the 1456 patients eligible for analysis. The most frequent postoperative complications reported were unexpected pain (8%), urinary retention (7%), bleeding (4.5%), staple-line complications (3.2%) and sepsis (1.4%).

Careful patient selection requires a team approach between the proctologist, gynaecologist, radiologist and gastro-enterologist. There is often a substantial overlap in defaecography findings between normal individuals, those with constipation predominant irritable bowel and patients with obstructed defaecation syndrome. Patients conventionally will have completed conservative treatments first including dietary manipulation and pelvic floor retraining. A recent study which randomised 119 patients to receive biofeedback therapy or undergo STARR concluded that treatment was successful in 33% of patients treated by biofeedback compared with 81% who underwent STARR after 1-year follow-up. The authors concluded that STARR offers a new treatment alternative for obstructed defaecation after failure of conservative measures, including biofeedback.⁷

Some patients who undergo STARR will have evidence of residual intussusception or rectocele. The circular stapler can reliably resect up to 8 cm of intussusception and rectoceles less than 5 cm satisfactorily. The technique has recently been modified by the development of a multi-reloadable transverse stapler (TranStar; Johnson & Johnson, Edinburgh, UK) which will allow for more redundant tissue to be resected where needed.

Inevitably, some of these patients will present with a variety of symptoms which requires a multifaceted approach. In my own series of patients treated by STARR to date, three have had to undergo additional surgery. One has undergone laparoscopic rectopexy for a previously undetected enterocele, a second patient was incontinent prior to STARR and remained so afterwards requiring sacral nerve

stimulation. A third patient had undergone laparoscopic ventral rectopexy elsewhere, then a STARR and subsequently had a sigmoid resection for symptomatic diverticulosis.

Conclusions

STARR offers a novel surgical approach to the treatment of patients with obstructed defaecation syndrome. Conventional rectocele repair is least successful in constipated patients perhaps because of the untreated associated internal intussusception contributing to continuing obstructed defaecation. Pre-operative assessment of these patients should be multidisciplinary in nature. Patients with slow transit constipation, irritable bowel syndrome, enterocele or anismus should be treated appropriately and not by STARR. Treatment of patients with obstructed defaecation syndrome should include dietary manipulation and pelvic floor retraining prior to consideration of STARR. Adequate training of colorectal surgeons to perform STARR followed by a period of mentorship should minimise the risk of peri-operative complications. Careful patient selection after failure of medical treatment combined with a trained colorectal surgeon performing the operation has, in the UK, resulted in satisfactory outcomes following STARR.

STARR: the case against

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STARR seems to be a versatile operation with many indications and justifications, one such being treatment of obstructed defaecation, itself said to emanate from internal intussusception of the rectal wall.

What is obstructed defaecation?

Represented among a broad range of defaecatory abnormalities, many hard to pin down precisely, is a group of patients who struggle to evacuate and frequently employ anal digitation. The purpose of this is unclear; whether to push something internal aside in some, or digitally extract stools in others.

Some women who struggle to defaecate find that digital pressure on the anterior perineum/lower vaginal wall may help. Usually, this is a clinical pointer to the presence of a symptomatic rectocele for which surgery is recommended

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via a variety of approaches – perineal, rectal and vaginal. Some patients with obstructed defaecation may develop a solitary rectal ulcer, worsening their clinical condition.

What is normal?

Asymptomatic volunteers, screened by proctography, show a variety of so-called ‘abnormalities’, including rectocele in 80% of women and internal intussusception in around 55% of normal men and women.¹ It is simply not enough to identify a proctographic ‘abnormality’ and then blame that as the cause of symptoms needing surgical correction.

Functional versus structural

Many patients object to the term ‘functional’ with its connotation of ‘unbelievable’ and ‘mad’. Yet patient acceptance is

quite easy with proper explanation and use of analogies from other systems. Asthma and hypertension are functional disorders of the pulmonary and cardiovascular systems: X-rays and biopsies may be normal but neither system works normally. If, as with asthma and hypertension, obstructed defaecation is indeed a functional problem, then any internal intussusception or rectocele is a chance normal finding, fruitless to correct surgically – unless accompanied by supporting clinical features such as perineal/vaginal digitation in the case of rectoceles. Here lies the controversy: if functional, then surgery would be irrational, as it would be for asthma or hypertension; but, if structural, then fixing the structure should fix the problem.

What can history tell us?

Attempts to correct internal intussusception surgically have been disappointing in patients with obstructed defaecation. In 1990, McCue and Thompson² reported 12 patients with a mean follow-up of just over 2 years where Ivalon sponge rectopexy did indeed rid them of their internal intussusception radiologically but not of their rectal discomfort and defaecatory difficulties – six patients continuing to strain and three being made worse. Orrom *et al.*³ reported 17 patients undergoing rectal fixation with just two improved by 2.5 years; Graf *et al.*⁴ found only one of 19 patients with intussusception improved by 8 years.

What do we know about the STARR procedure?

Not very much! We cannot be sure that it does indeed correct the supposed ‘abnormality’, follow-up has been too short with patient selection too varied and arbitrary: some eminent surgeons advise caution.

Patient selection

Proponents of STARR claim it normalises rectal anatomy, resulting in more efficient evacuation. Patients selected include those with long-standing symptoms suggestive of obstructing defaecation syndrome who have failed conservative therapy, including biofeedback, and who have radiological evidence of a rectocele and/or rectal intussusception – but not all authors have been as strict as Boccasanta *et al.*⁵

Surgery for intractable asthma

Would one consider an operation for asthma or essential hypertension if they became hard to control by other means? Furthermore, one STARR enthusiast’s failure of medical treatment is a challenge to make it succeed to a STARR detractor. Hwang *et al.*⁶ retrospectively evaluated the results of electromyography-based biofeedback in 34

patients with rectal intussusception who had undergone at least two biofeedback sessions and concluded that biofeedback was safe and worked well for constipated and incontinent patients willing to complete the course.

Does STARR do what it says on the packet?

Pechlivanides *et al.*⁷ studied 16 patients who underwent a STARR procedure with long-standing symptoms suggesting obstructed defaecation syndrome. Inclusion criteria were based upon the consensus conference in Rome.⁸ Patient satisfaction was graded as excellent or very good with no defaecatory problems in five patients and good with occasional, non-significant defaecatory problems in nine patients. Whilst the authors showed convincingly an overall significant radiological improvement of rectocele size and degree of intussusception, in five patients a rectocele was still present and in 10 intussusception persisted. Does this imply that the operating surgeon should not be concerned about residual uncorrected elements in the rectum? Indeed, how important is complete (or indeed any) correction of the supposed radiological abnormalities?

Are there downsides?

Pescatori *et al.*⁹ and Bassi *et al.*¹⁰ have both reported women developing rectovaginal fistulae. Proctalgia from retained staples was reported in one patient by De Nardi *et al.*¹¹ Sciaudone and co-workers¹² described a rectal diverticulum causing severe constipation that was noted 6 months later necessitating transanal diverticulectomy and rectal wall repair. The largest series of problems has been reported by Dodi *et al.*¹³ of 14 chronically constipated patients undergoing STARR, two experienced rectal bleeding, seven anal pain, three had faecal incontinence, the internal rectal mucosal prolapse recurred in six and obstructed defaecation in seven. Four of these patients required re-operation. The authors concluded that parity, spastic floor syndrome and psychoneurosis seemed to be risk factors predisposing to failure. There is also the risk of other, more serious, complications such as bowel perforation, peritonitis and pelvic sepsis.

What do eminent bodies say?

The UK National Institute for Health and Clinical Excellence issued guidance in April 2006.¹⁴ NICE concluded that current evidence on safety and efficacy was not adequate and more rigorous selection criteria were needed.

Conclusions

The underlying concept presupposes a structural abnormality, correction of which is simple and effective. Yet the

concept may well be wrong, the evidence is poor and the operation can be dangerous. Jayne and Finan¹⁵ have expressed concern at the rapid implementation of the STARR procedure into wide-spread clinical practice and have suggested a thorough audit through the medium of the Association of Coloproctology of Great Britain and Ireland. Only in this manner can we, as a colorectal community, determine whether there is any place at all for the STARR procedure.

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e-Letters – new additions

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